

## Occurrence of an Archaic Molorchine Beetle (Coleoptera, Cerambycidae) in Western Sichuan, Southwest China

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**Abstract** A new species of the genus *Molorchus* is described from western Sichuan, Southwest China, under the name of *M. relictus*. It closely resembles *Molorchus pinivorus* of central Honshu, Japan, and seems to belong to the same lineage as the latter. This new species shows some plesiomorphy in body structure like *M. pinivorus*.

The brachelytrous cerambycid beetles of the genus *Molorchus* in a narrow sense, comprising about eight species, are characterized by the small eyes, posteriorly open fore coxal cavities and two anal veins of hind wing connected with a short cross vein. Most members of the genus occur as relicts in their own narrow ranges of the Temperate to Subarctic Zones of Eurasia including the Japanese Islands, and the West Coast of North America, with the exception of *M. minor*, the type species, which is widespread in Eurasia. The beetles of this genus are found in coniferous forests or broadleaved and coniferous mixed forests, since their larvae live under barks of decayed coniferous trees. SAMA (1994) reviewed the genus *Molorchus*, and discussed on the taxonomy of the West Eurasian species, viz., *M. minor* LINNAEUS, *M. monticola* DANILEVSKY et MIROSHNIKOV, *M. juglandis* SAMA and *M. pallidipennis* (HEYDEN). In our knowledge, three other species of the genus occur in East Asia, viz., *M. changi* GRESSITT, *M. pinivorus* TAKAKUWA et IKEDA and *M. ikedai* TAKAKUWA, and *M. eburneus* LINSLEY in North America.

*Molorchus pinivorus* TAKAKUWA et IKEDA (1980, pp. 35–39, figs. 1–A, 2–1a, 2–1b) seems to be a relict species in central Honshu of the Japanese Islands. It resembles *M. minor* in basic characters, though a direct relationship between the two species cannot be inferred because of major differences. *Molorchus pinivorus* has such unique characters as the robust body, distinctly attenuate elytra, short antennae, and stout legs with developed femoral clubs. These diagnostic characters remind us of an Asia Minor relict, *M. juglandis*, though geographical gap between this and the Japanese species exceeds 7,000 km in a bee-line.

Recently, I received a rather long series of specimens of a molorchine beetle taken in western Sichuan, Southwest China. It turned out to be a close relative of *M. pinivorus* long waited for, because it has many important characters in common with the Japanese species. This discovery is very important in several respects. In the first

place, the type locality of this new species, western Sichuan, lies about a half way from central Honshu of the Japanese Islands to Asia Minor, and neatly falls in the centre of the blank in our knowledge about the distribution of the relict species of the genus. The occurrence of such relict species on the high mountains of Southwest China is an irrefutable proof that those mountains were once spread by ancestors of certain *Molorchus*. Secondly, *M. relictus* has still retained such archaic characters as the large fore body with short stout antennae, and apically attenuate elytra. Besides, it has gently oblique pale maculations on the elytra. They seem rather plesiomorphic as compared with those in other *Molorchus* whose maculations are distinctly inclined. These ancestral characters are commonly found in the Japanese species. It is most probable that the origin of the beetles belonging to the genus *Molorchus* may be traced back to sometime in the Tertiary. The ancestral beetles were once widespread in the ancient continent of the Northern Hemisphere, but remain now as relicts in limited places of Eurasia and North America. The widespread Eurasian species, *M. minor* may be a rather advanced member derived from certain ancestor in rather a recent period.

The abbreviations used herein are as follows: BL – body length, measured from apical margin of clypeus to elytral apices; HW – maximum width of head across eyes; AL – antennal length; FL – length of frons, measured along the median line; FB – basal width of frons; CL – length of clypeus, measured along the median line; CB – basal width of clypeus; PL – length of pronotum; PW – maximum width of pronotum; PA – apical width of pronotum; PB – basal width of pronotum; EL – length of elytra; EW – maximum width of elytra; M – arithmetic mean.

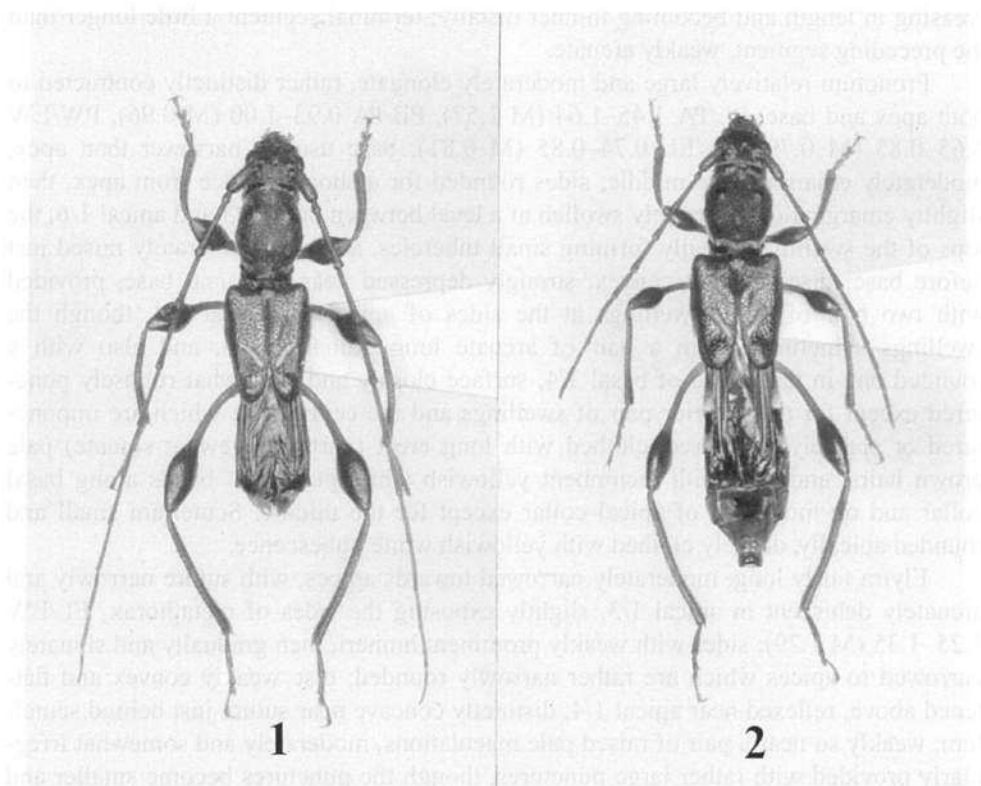
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*Molorchus relictus* sp. nov.

(Figs. 1–12)

Medium to large-sized species of robust brown-coloured body, with a pair of white oblique elytral maculations as in other congeners, with antennae and legs very stout. Colour light chocolate brown, slightly yellowish in antennae, palpi and legs except for each femoral club, and also usually infuscate on both basal and apical collars of pronotum, eyes, and mandibular tips; elytra light chocolate brown, usually infuscate near apices and sometimes also near suture behind scutellum, provided with a pair of oblique raised pale-yellow maculations behind the middle, the inner angle of each maculation being usually about 90° in degree; hind wings translucent dark brown; ventral surface dark chocolate brown, usually infuscate in pro- and metasterna, with anal sternite dark yellowish brown.

*Male.* Head moderately voluminous, rather long and rather weakly convex, HW/PA 0.95–1.03 (M 0.99), HW/PW 0.8–1.02 (M 0.84), closely and somewhat ru-



Figs. 1-2. Habitus of *Molorchus relictus* sp. nov. from Wolong in Sichuan Province, Southwest China; 1, holotype ♂; 2, allotype ♀.

gously punctured, rather sparsely clothed with erect pale-yellow hairs; frons gently raised, weakly narrowed apicad, with a distinct median longitudinal groove extending to just before vertex, lateral grooves deep and wide, FL/FB 0.53–0.63 (M 0.60); vertex depressed, with distinctly prominent antennal tubercles at the sides; occiput moderately raised; clypeus wide and rather long, CL/CB 0.22–0.29 (M 0.25), strongly punctured, gently bisinuate at the basal margin; mandibles short and broad, briefly hooked at apices; genae rather deep, strongly angulate ventrad in frontal view, nearly  $\frac{4}{7}$  the depth of lower eye-lobes; eyes fairly small, gently prominent, separated from each other by a little less than  $\frac{5}{8}$  the maximum width of head. Antennae 12-segmented, stout and rather short, 1.35–1.58 times as long as body, clothed with dense minute pubescence on segments 5–12 and most of segment 4, and also with long erect and somewhat sinuate light brown hairs on segments 1–6; scape short and thick, coarsely punctured, less than  $\frac{5}{8}$  the length of segment 3; segments 3 and 4 distinctly thickened at each apex, the former one slightly shorter than the latter; segment 5 the longest, a little longer than segment 3, rather weakly thickened apicad; segments 6–11 slightly de-

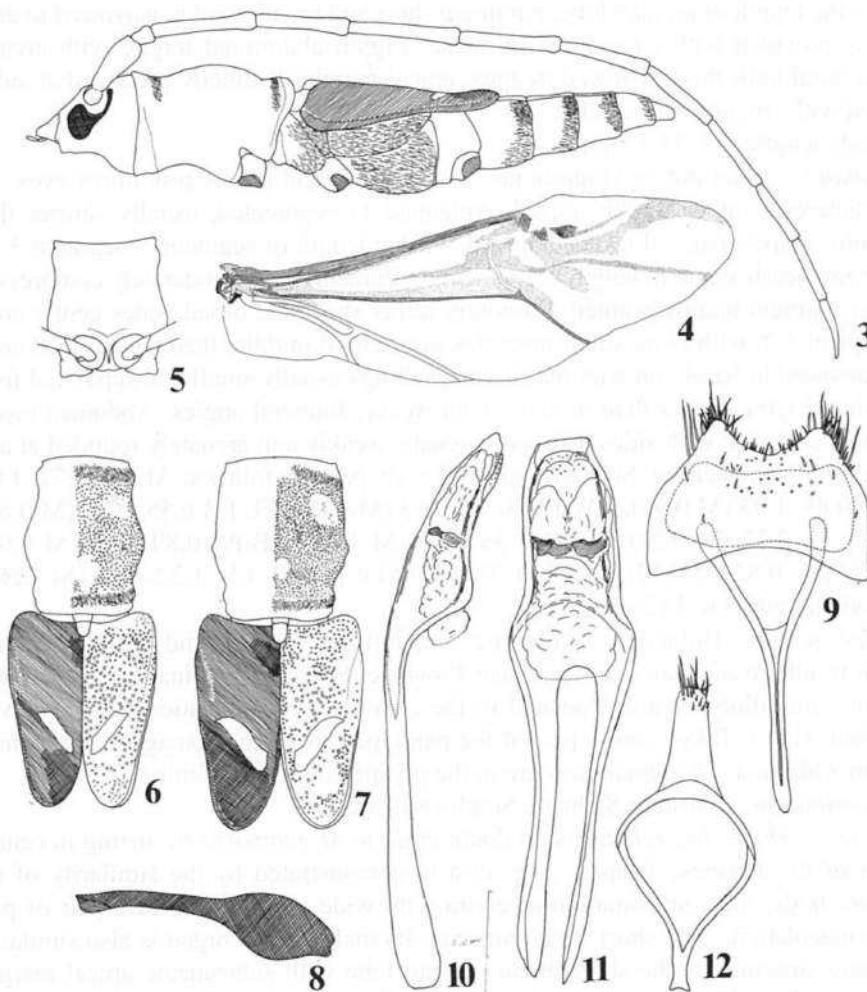
creasing in length and becoming thinner distally; terminal segment a little longer than the preceding segment, weakly arcuate.

Pronotum relatively large and moderately elongate, rather distinctly contracted to both apex and base, PL/PA 1.45–1.64 (M 1.57), PB/PA 0.93–1.00 (M 0.96), PW/EW 0.65–0.83 (M 0.79), PL/EL 0.74–0.85 (M 0.81); base usually narrower than apex, moderately emarginate in middle; sides rounded for a short distance from apex, then slightly emarginate, moderately swollen at a level between basal 1/3 and apical 1/6, the tops of the swellings usually forming small tubercles, and also moderately raised just before base; disc strongly convex, strongly depressed near apex and base, provided with two pair of weak swellings at the sides of apical and basal 1/4, though the swellings sometimes form a pair of arcuate longitudinal ridges, and also with a rounded one in the centre of basal 1/4; surface closely and somewhat rugosely punctured except for the anterior pair of swellings and the central one which are impunctured or sparsely punctured, clothed with long erect (partly somewhat sinuate) pale brown hairs, and also with recumbent yellowish white pubescent bands along basal collar and on most part of apical collar except for the middle. Scutellum small and rounded apically, densely clothed with yellowish white pubescence.

Elytra fairly long, moderately narrowed towards apices, with suture narrowly and arcuately dehiscent in apical 1/3, slightly exposing the sides of metathorax, EL/EW 1.25–1.35 (M 1.29); sides with weakly prominent humeri, then gradually and sinuately narrowed to apices which are rather narrowly rounded; disc weakly convex and flattened above, reflexed near apical 1/4, distinctly concave near suture just behind scutellum, weakly so near a pair of raised pale maculations, moderately and somewhat irregularly provided with rather large punctures, though the punctures become smaller and sparser near apices, clothed with brownish hairs near the middle. Hind wings about  $1 + 1/4$  the length of hind body.

Prosternum arcuately emarginate in basal 2/3, closely provided with deep transverse furrows and thinly haired; prosternal process triangularly pointed and produced ventrad in basal 1/2, then strongly compressed between fore coxae; fore coxal cavities open posteriorly in 1/3 the width of prosternal base; furcasternum hardly produced posteriad. Meso- and metathoraces densely clothed with silvery white pubescence, though the pubescence becomes especially denser at the internal part of mesepimeron, apical part of metepisternum, and on metasternum; punctures close and somewhat rugose in most parts; mesosternal process rather wide. Abdomen short and rather broad, gently arcuate at sides, provided with dense silvery white pubescent maculations on posterior parts of sternites 3–6; anal sternite arcuately and distinctly concave, arcuately emarginate on apical margin, clothed with rather long yellowish brown hairs near sides.

Legs long and very stout, with femoral clubs well developed, tibiae distinctly arcuate; hind legs nearly 1.2 times as long as body length, with femoral club occupying apical 7/11, tibia weakly sinuate in apical half; first tarsal segment a little shorter than the following two segments combined.



Figs. 3–12. Diagnostic characters of *Molorchus relictus* sp. nov., from Wolong in Sichuan Province, Southwest China. — 3, Body in profile, ♂; 4, right hind wing, ♂; 5, prosternum, ♂; 6, pronotum and elytra, ♂; 7, ditto, ♀; 8, right hind femur, ♂; 9, 8th abdominal segment in dorsal view, ♂; 10, median lobe of male genitalia in lateral view; 11, ditto, dorsal view; 12, tegmen in dorsal view.

Male genital organ rather small and moderately sclerotized. Median lobe short and broad, rather weakly convex and gently arcuate in profile, with fairly broad apical lobe; median struts fairly short,  $5/8$  the whole length of median lobe; dorsal plate

broad, subtruncate at apical margin; ventral plate in apical part arcuately narrowed to broadly rounded apex, slightly shorter than dorsal plate. Tegmen small, a little less than 5/8 the length of median lobe; paramere short and broad, weakly narrowed to apex which is provided with irregular-sized setae. Eighth abdominal tergite with arcuate sides in basal half, then narrowed to apex, apical margin disitinctly produced at sides, provided with irregular-sized setae.

Body length: 9.5–15.7 mm.

*Female.* Head not so voluminous, with smaller and hardly prominent eyes, antennal tubercles rather weakly raised. Antennae 11-segmented, usually shorter than body, thin; scape weakly thickened apicad, 4/5 the length of segment 3, segment 3 the longest and nearly equal in length to segment 5, segments 6–10 moderately compressed, terminal segment bluntly pointed. Pronotum rather short and broad; sides gently arcuate in apical 1/2, with blunt small tubercles just behind middle, then weakly and arcuately narrowed to basal constriction; discal swellings usually small and separated from each other. Elytra shorter than in male, with weaker humeral angles. Abdomen broad, with short sternites, with sides distinctly arcuate, weakly and arcuately rounded at apical margin of anal sternite. Standard ratios of body parts as follows: AL/BL 0.72–1.00, HW/PA 0.88–1.03 (M 0.96), HW/PW 0.75–0.93 (M 0.81), FL/FB 0.55–0.75 (M 0.61), CL/CB 0.22–0.37 (M 0.28), PL/PA 1.33–1.63 (M 1.45), PB/PA 0.89–1.00 (M 0.96), PW/EW 0.67–0.82 (M 0.77), PL/EL 0.70–0.80 (M 0.74), EL/EW 1.22–1.36 (M 1.28).

Body length: 8.6–14.2 mm.

*Type series.* Holotype ♂, allotype ♀, paratypes: 15 ♂♂ and 19 ♀♀, Wolong, 2,200 m in alt., Wenchuan Xian, Sichuan Province, Southwest China, 6~7-VI-1992. The holo- and allotypes are deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and a pair of the paratypes are in the Kanagawa Prefectural Museum, Odawara. The remainings are in the private collection of mine.

*Distribution.* Western Sichuan, Southwest China.

*Notes.* *Molorchus relictus* is no doubt close to *M. pinivorus* occurring in central Honshu of the Japanese Islands, as is clearly demonstrated by the similarity of the large fore body, the comformation of elytra with wide inner angles of a pair of pale oblique maculations, and short stout antennae. Its male genital organ is also similar in such basic structure as the short broad median lobe with subtruncate apical margin, and short and weakly attenuate paramere. Though common in some basic characters, this new species is also clearly discriminated from *M. juglandis* by the larger and robust body form, especially of fore body, closely punctured pronotum, and wider inner angle of a pair of pale oblique maculations on the elytra, which are less than 75° in degree in the latter species.

All the specimens of the type series of this new molorchine were collected on white blossom of a shrub related to *Spiraea thunbergi* (Rosaceae) growing at the edge of a mixed broadleaved forest. The type locality is highly humid in climate, and usually covered with fog even in the daytime. The surface of branches and trunks of trees are densely covered with lichens. The molorchine came flying to the blossom in mid-



day in clear weather, together with such other cerambycids as *Anastrangalis dissimilis* and clytine species.

## 要 約

新里達也：中国四川省西部に隔離されたシラホシヒゲナガコバネカミキリ属の1新種。——シラホシヒゲナガコバネカミキリ属の種は、ユーラシアおよび北米西海岸の温帯から亜寒帯にかけて8種が知られ、幼虫は衰弱した針葉樹のおもに形成層に食入する。このうち、ユーラシアに広く分布する属基準種のシラホシヒゲナガコバネカミキリを除く7種は、いずれも比較的狭い分布域に隔離されている。日本の本州中部に分布するオニヒゲナガコバネカミキリもそのような遺存種のひとつであるが、その特異な形態的特徴から、直接の類縁関係を特定することはできなかった。なお、この種は小アジアに隔離分布する *M. juglandis* に比較的よく似ているが、両者の分布域はユーラシアの東西に局在している。このたび、中国四川省西部の高地で採集された本属の標本を検討したところ、外部形態および雄交尾器の形態から、オニヒゲナガコバネカミキリにきわめて近縁な種であることが判明した。この種は、明るい褐色の色彩と、大きく頑強な体前半部、短く太い触角をもち、上翅は先端に向かって強く狭められ、上翅の1対の白色斜紋の内角は広くてほぼ90度を示す。本論文では、オニヒゲナガコバネカミキリに近縁の新種 *M. relictus* sp. nov. として、本種を記載命名した。

シラホシヒゲナガコバネカミキリ属の起源はおそらく第三紀まで遡り、そのころの古大陸で針葉樹の分布拡散とともに一度ひろがったが、現在はユーラシアから北米にかけての温帯林に、その子孫が隔離分布しているのであろう。一方、ユーラシアの亜寒帯に広く分布するシラホシヒゲナガコバネカミキリは、分化の起源が比較的新しい種でないかと推定される。

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